
FRBSF WEEKLY LETTER

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Deposit Deregulation and the Behavior of M1

M1, the narrow transactions measure of money, grew at an approximate 12.5 percent annual rate from the fourth quarter of 1984 to August 1985. In two of the last four months, it has grown at around 20 percent. These movements in M1 have refocused attention on the impact of deposit deregulation on the behavior of the monetary aggregates. In particular, given the sharp decline in interest rates since late in the third quarter of 1984, some observers have suggested that deregulation has permanently heightened the response of M1 to changes in interest rates.

In this *Letter*, we discuss how the demand for M1 has changed in response to deposit deregulation. We present evidence suggesting that the response of M1 to changes in market interest rates has been altered, although perhaps only moderately, as a result of the deregulation of interest payments on transactions deposits.

However, we believe that any tendency for the interest-sensitivity of M1 to increase in recent years represents an intermediate rather than a lasting effect of deposit deregulation. In this regard, we think that the behavior of M2, which has undergone more complete deregulation, gives us a view of what deposit deregulation may mean for M1. The behavior of M2 suggests that, with complete deregulation, the long-run response of M1 to changes in interest rates may actually be smaller. In the short-run, by contrast, sluggish rate adjustment by banks will result in an exaggerated response of M1 to changes in market rates.

The impact of fixed ceilings

In examining its impact, it is useful to trace the chronology of deregulation. For M1, a major step in the process of deregulation was the nationwide authorization of fixed-interest rate ceiling NOW accounts in 1981. Currently, these accounts have ceiling rates of 5¼ percent. In 1983, Super NOW accounts were authorized; these are not subject to interest rates ceilings but do require a minimum balance. When first offered in January 1983, these accounts carried a legal minimum requirement of \$2,500. This was reduced to \$1,000 in January of this year. It is important to note that both NOW and Super NOW accounts are available only to households and non-profit firms.

So far, the first of these two developments has been more important for M1. As of August 1985, total interest-bearing checking deposits stood at \$167 billion, or almost 28 percent of M1. Of these interest-bearing deposits, about two-thirds were NOWs and one-third Super NOWs. In other words, Super NOWs constituted less than 10 percent of M1.

The dominance of fixed-ceiling (or regular) NOW accounts has been important in determining the impact that deposit deregulation has had on the behavior of M1 up to this point. To a depositor, the cost of holding funds in such an account is the difference between the rate paid on NOW accounts and that paid on an alternative market instrument such as Treasury Bills. This opportunity cost, as it is called, is much lower for NOW accounts than for traditional checking accounts (demand deposits), which pay no explicit interest.

Consequently, a given change in market interest rates represents a much greater *percentage* change in the opportunity cost of NOW accounts than demand deposits. For instance, if market interest rates increase from 10 percent to 11 percent, the percentage change in the opportunity cost of NOW accounts is about 20 percent, whereas the change in the opportunity cost for demand deposits is only 10 percent. If money holdings respond in proportion to relative changes in the opportunity cost of holding money, as is usually assumed, NOW accounts will be more affected by a given interest rate change than demand deposits. Thus, the overall interest-sensitivity of M1 should increase with the introduction of fixed interest rate transaction accounts.

To see whether there is support for this *a priori* argument, we conducted statistical tests using data from the first quarter of 1970 to the fourth quarter of 1984. Our results show that the introduction of regular NOW accounts in January 1981 did lead to some increase in the sensitivity of M1 to changes in market interest rates. However, the change appears to have been relatively small — something on the order of a 15-percent rise in the sensitivity of M1 to market interest rates. (To be precise, we find that the interest elasticity — which is a measure of the interest-sensitivity — of M1

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increased from slightly more than 0.11 to slightly less than 0.13 when the sample is extended from 1980 to 1984.) Thus, our findings suggest that deposit deregulation, at least through the end of 1984, has had a modest impact on the behavior of M1 with respect to market interest rates when compared with the behavior of that aggregate in the 1970s.

One reason that our statistical analysis does not reveal a large increase in the interest-sensitivity of M1, despite what seems to be a strong *a priori* case for such an increase, may be the implicit interest paid on traditional transaction deposits. That is, instead of comparing the zero explicit interest paid on demand deposits with the 5¼ percent paid on NOWs, individuals also considered the value of services (such as free checking) they received with demand deposits. The available empirical evidence suggests that the return on demand deposits (taking implicit interest into account) probably is closer to the rate paid on NOWs than it is to zero. Consequently, it is likely that the introduction of NOWs did not reduce the opportunity cost of holding money by as much as the full 5¼ percent banks were allowed to pay. This implies that the resulting change in the interest-sensitivity of M1 should not be large.

The behavior of M1 also may have been affected by developments involving business demand deposits, which are an important component of M1. At the end of 1984, demand deposit balances of financial (nonbank) and nonfinancial businesses totaled about \$200 billion and represented two-thirds of gross demand deposits. While business transaction deposits cannot earn explicit interest, it is common for banks to pay implicit interest on these deposits. At many banks, this is accomplished via compensating balance arrangements. Under such arrangements, banks compensate businesses for holding demand deposits by providing credit services (loans and loan commitments) and operational services (e.g., lock boxes and wire transfers).

Particularly relevant to our discussion of the interest elasticity of M1 is the growing role of compensating balances involving operational services since the latter part of the 1970s. Under such arrangements, the implicit rate of return on business demand deposits is determined by short-run market interest rates (with an adjustment to reflect the cost of reserve requirements). Thus, because of

compensating balances involving operational services, the opportunity cost of holding deposits would not change by much in response to changes in market interest rates. Consequently, business demand deposits are not likely to be sensitive to changes in market rates either.

Permitting flexible rates

The introduction of the regular NOW account represents an intermediate stage in transaction deposit deregulation. However, the second phase of this deregulation — flexible yields on transaction accounts as represented by the Super NOW — gradually is becoming more important. In addition to the continued growth in Super NOW accounts, fixed-interest rate ceilings will be effectively removed from all household transaction accounts in early 1986. This latter stage of deposit deregulation will have very different implications for the behavior of M1.

The sensitivity of money to changes in market rates declines when the yield on holding money is allowed to vary with market yields. That is, if market rates and the return on money move together, there is no change in the relative opportunity cost of holding money as market rates vary. Thus, in a world of flexible interest rates on deposits, money demand is likely to be much less sensitive to changes in interest rates.

To glean some insights into what the second stage of deregulation will mean for M1, we looked at the impact deregulation has had on M2. We chose M2 because deregulation of M1 has largely been restricted to higher explicit but fixed yields, with Super NOWs the only accounts not subject to interest rate ceilings. In contrast, the deregulation of M2, which started earlier — in 1978, has involved both higher explicit yields and yields that have tended to move with market interest rates.

To isolate the effects of deregulation, we focused upon the part of M2 that has been most deregulated: "nontransactions" M2. This consists of the part of M2 that is not counted in M1. It includes MMDAs, savings accounts, small time deposits, overnight Repurchase Agreements (RPs) and Eurodollar accounts. Our statistical tests indicate that the sensitivity of nontransactions M2 to changes in market interest rates is significantly lower than it was before 1979. To be more precise, we find that a numerical measure of this sensitivity is now less than half what it was prior to the deregulation of M2.

A significant aspect of this lowered sensitivity is that the decrease becomes effective only a few months after the change in other market rates.

That is, the contemporaneous response of non-transactions M2 to a change in interest rates is not significantly different from its prederegulation response, but the change in the growth rate of M2 two to three months after an interest rate change is now significantly smaller. Thus, once the full effects of an interest rate change have worked themselves out, the change in M2 is smaller than what it used to be prior to deregulation.

This finding is consistent with the rate-setting behavior of financial institutions that some observers have commented upon recently. Rates on Money Market Deposit Accounts, for example, do not decrease immediately after a fall in market rates but do so with a lag. For our purposes, the point is that once the rate adjustment is complete, the opportunity cost of these accounts is close to what it was before the change in market rates. This explains why nontransactions M2 shows a lower sensitivity to interest rate changes in the long-run.

It is natural to expect that M1 will show a response similar to that of M2 once deregulation is complete. However, there are several reasons that the change in the behavior of M1 may not be as great as it has been for nontransactions M2. One obvious reason is that currency, a major component of M1, does not earn interest. Second, households can be expected to continue to hold (noninterest-bearing) demand deposits, especially because the implicit interest earned on such accounts is not taxable. (Household demand deposit accounts totalled \$80 billion at the end of 1984, or 14 percent of M1 at that time.) Finally, there are as yet no proposals to permit businesses to hold interest-bearing transaction accounts.

For the more immediate future, it is even less clear what the impact of deregulation will be. Even though regulatory restrictions on household M1 accounts will be removed in early 1986, one cannot predict how quickly banks will move to implement either higher explicit rates or flexible rates. Recent experience suggests that banks will change their policies slowly. For example, the legal minimum deposit requirement on Super NOWs was reduced from \$2,500 to \$1,000 early this year but most banks have not yet implemented the change. While competitive pressures probably will move the market toward making flexible rate transactions accounts more widely available, banks also may be slow to abolish fixed-rate NOWs.

To the extent that banks are slow to adopt flexible rate accounts, the transition of M1 to a lower interest-sensitivity may be delayed. The experience in 1985, particularly since May, appears to support this proposition. Short-run market rates have been approaching the fixed ceilings on NOW accounts without any systematic action by banks to adjust these rates. In addition, the rates offered on Super NOWs also have not been adjusted as rapidly as rates offered on managed liabilities such as large CDs. The result has been an explosion in M1 growth.

Whether banks will continue their present behavior in the future is as yet uncertain. The prevailing level of interest rates is likely to be an important factor. If market rates fall sufficiently, banks are likely to reduce the rates they offer on fixed-ceiling NOW accounts, effectively turning them into variable rate accounts. Even with variable rates, however, it is likely that further rate adjustments on these accounts will lag behind changes in other market rates. During any such intervening period, the growth rate of M1 is likely to change significantly in response to changes in market rates.

Summing up

In this *Letter*, we have discussed the case for an increase in the interest-sensitivity of M1. Despite the existence of a strong *a priori* case for a large increase in M1 sensitivity, our empirical results show only a modest rise through the end of 1984. More important is the fact that we expect this increase in sensitivity to be reversed as more and more of M1 comes to offer variable yields.

However, M1 is likely to continue to show large responses in the period immediately following changes in market interest rates. As discussed above, this occurs because banks are slow to vary the yields on transaction accounts when market rates change. Thus, M1 growth in the short-run will now be subject to an additional influence — the rate-setting behavior of banks. This could lead to some instability in the response of M1 to changes in market interest rates in the short-run, making it more difficult to interpret the behavior of M1 following changes in these rates.

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT (Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 9/18/85	Change from 9/11/85	Change from 9/19/84 Dollar	Percent ⁷
Loans, Leases and Investments ^{1 2}	194,567	– 96	11,642	6.3
Loans and Leases ^{1 6}	175,439	– 75	11,319	6.8
Commercial and Industrial	50,844	– 101	999	2.0
Real estate	64,480	35	3,419	5.5
Loans to Individuals	35,836	121	5,957	19.9
Leases	5,415	– 16	365	7.2
U.S. Treasury and Agency Securities ²	11,964	– 60	189	1.6
Other Securities ²	7,164	39	136	1.9
Total Deposits	198,597	– 1,622	9,665	5.1
Demand Deposits	47,091	– 1,276	3,178	7.2
Demand Deposits Adjusted ³	31,679	– 1,034	3,144	11.0
Other Transaction Balances ⁴	13,942	– 305	1,771	14.5
Total Non-Transaction Balances ⁶	137,564	– 41	4,715	3.5
Money Market Deposit Accounts—Total	45,106	– 299	7,408	19.6
Time Deposits in Amounts of \$100,000 or more	38,271	223	– 2,730	– 6.6
Other Liabilities for Borrowed Money ⁵	22,251	– 1,445	334	1.5
Two Week Averages of Daily Figures	Period ended 9/9/85	Period ended 8/26/85		
Reserve Position, All Reporting Banks				
Excess Reserves (+)/Deficiency (–)	– 2	91		
Borrowings	16	25		
Net free reserves (+)/Net borrowed(–)	– 18	66		

¹ Includes loss reserves, unearned income, excludes interbank loans

² Excludes trading account securities

³ Excludes U.S. government and depository institution deposits and cash items

⁴ ATS, NOW, Super NOW and savings accounts with telephone transfers

⁵ Includes borrowing via FRB, TT&L notes, Fed Funds, RPs and other sources

⁶ Includes items not shown separately

⁷ Annualized percent change